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Vol. 56 August, 1954 668

NOMENCLATURAL NOTES CONCERNING JUNIPERUS

Marion T. Hall

The nomenclature for the calciphilous juniper from the Edwards Plateau of central Texas is considerably confused. It has long been referred to in the manuals as *Juniperus mexicana* Sprengel. The name *Juniperus Ashei* Buchholz is now in fairly common use for the Texas species, and it is my purpose to show why it may continue to be used and why *Juniperus mexicana* Spreng. and other names may not.

Early collectors had the idea that this Texas calciphile represents the northernmost distribution of a juniper from the mountains of central Mexico. American authors have consistently referred this juniper to Sprengel's species described in 1826 on page 909 in volume 3 of Linné Systema Vegetabilium as:

> "*mexicana** 20. J. arborea, foliis arctissime 4fariam imbricatis 3angulari-ovatis obtusis crassis. Mexico. (Cupressus sabinoides Kunth.)"

Sprengel's species, based on *Cupressus sabinoides* HBK,[1] refers to a juniper of high altitudes in central Mexico which resembles the Texas juniper somewhat in habit but is otherwise very different. At that time Sprengel was justified in naming his transferred species *mexicana*, since there were no rules. However, after the establishment of the International Rules of Botanical Nomenclature, it would have been necessary (in lieu of Art. 54 of the rules) for subsequent authors to re-establish the

[1] Humboldt, Bonpland, and Kunth. Nova Gen. et Sp. Plant. ii: 3, 1817.

name *sabinoides* for Sprengel's species, *Juniperus mexicana*, which, by these retroactive rules of nomenclature, was superfluous when created and thereby illegitimate. If Sprengel could have looked ahead, he might have transferred HBK's specific name to *Juniperus* and avoided creating a name destined to become illegitimate. When Martínez[2] examined the problem in 1946 and determined which juniper Sprengel and Kunth were describing, he had to find a new name because both *sabinoides* and *mexicana* were by then homonyms.[3] Martínez decided that Sprengel's and HBK's names applied to a juniper which he considered to be a form of another species. He had to apply a new name to his species, too, since the only existing one, *Juniperus tetragona* Schl.[4] (1838), was a homonym (of *Juniperus tetragona* Moench,[5] 1794). Thus, in 1946 Martínez named the Mexican species *Juniperus monticola* and created two forms within it. One of these forms, *Juniperus monticola* Martínez forma *compacta* Martínez is the element to which he referred *Juniperus mexicana* Spreng. and *Cupressus sabinoides* HBK.

Both the Texas calciphile (*J. Ashei* Buchholz) and *J. monticola* Mart. are in the Sabina section and have their affinities with the xerophytic junipers which have toothed leaf margins and branching to the seventh degree. While these two species are superficially similar (e.g., in habit, fruit color, size, and odor), they are very different when these characters are studied carefully and in their proper relation to other characters. On morphological evidence the Texas calciphile is closely related to *J. monosperma* (Engelm.) Sarg. and its close relatives *J. occidentalis* Hook., *J. Pinchoti* Sudw., *J. californica* (Carr.) Antoine, *J. erythrocarpa* Cory and varies in the direction of the *J. deppeana* Steud. group. It is not close to *J. monticola* Mart. or *J. monticola* forma *compacta* Mart. (*J. mexicana* Spreng.) to which it has been assigned by American authors. The chief differences

[2] Martínez, M. *Los Juniperos Mexicanos.* Anales Del Instituto de Biologia *17:* 3–128. 1946.

[3] Grisebach, A. H. R. Spicil. Fl. Rumel. ii: 352. 1844. Grisebach had given the name *Juniperus sabinoides* to another species in 1844. Grisebach's name applies to *J. foetidissima* Willd. Schlechtendal had given the name *J. mexicana* to another species in 1830. The modern interpretation requires the epithets *sabinoides* and *mexicana* to become homonyms based on Article 73 of the International Code of Botanical Nomenclature in lieu of the retroactive nature of these rules.

[4] Schlechtendal, D. F. L. Linnaea XII. 495–496. 1838.

[5] Moench, C. Meth. Pl. 699. 1794. (= *J. phoenicea* L.)

between *J. Ashei* and *J. monticola* are listed in Table 1 and illustrated in Plate 1.

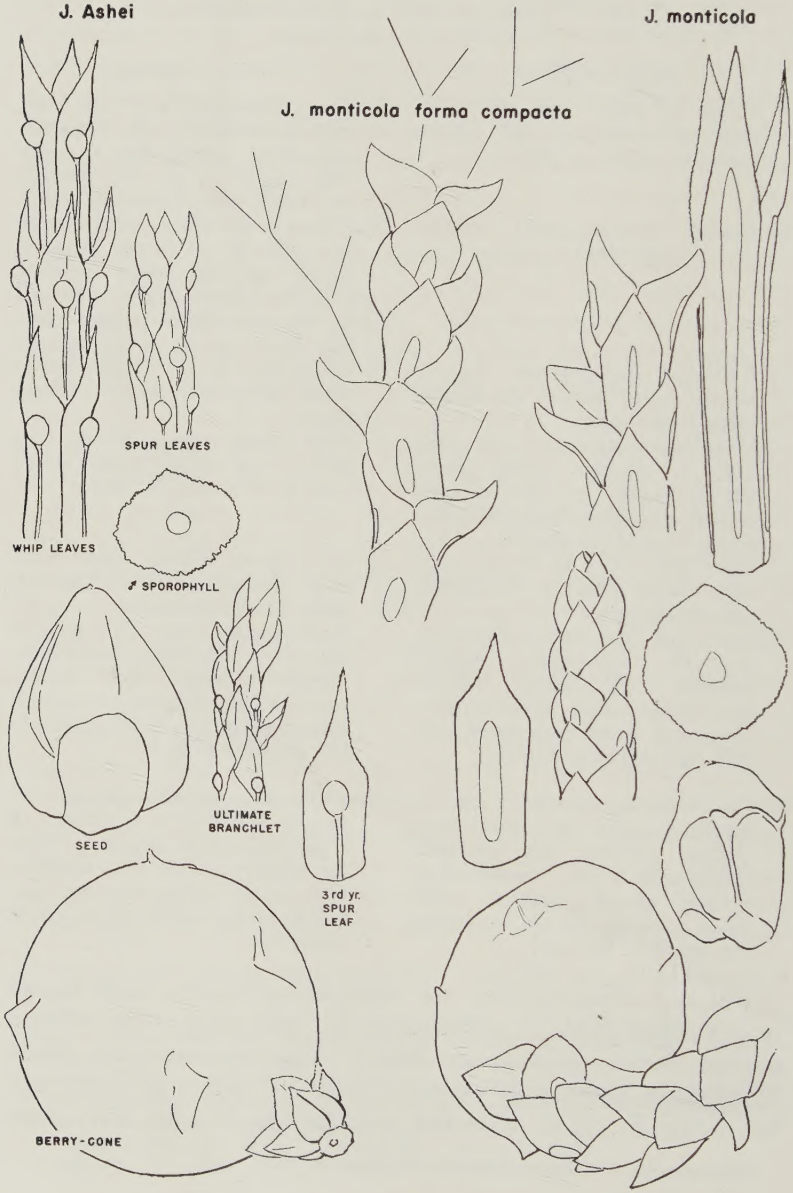
TABLE 1. COMPARATIVE GROSS MORPHOLOGY OF J. ASHEI AND J. MONTICOLA.

Juniperus Ashei	*Juniperus monticola*
1. Trunk branched near the base; angle of branching wide; aspect bush-like; height to 35 feet.	1. Trunk branched near the base, branches twisted; angle of branching acute; aspect like a dwarf tree; height to 25 feet (usually less than 3 feet in forma *compacta*).
2. Foliage dense; mostly ternate, even on ultimate branchlets.	2. Foliage more dense; mostly decussate (densest in forma *compacta* where branching occurs typically from the axil of every other leaf in the same plane giving a fan-like, blunt aspect to the foliage).
3. Foliage yellow-green. Young woody twigs bright rust-brown aging to ash-gray.	3. Foliage blue-green. Young woody twigs tawny-red with a violet blush.
4. Whip leaves average 7 mm. long with a circular raised gland (about ½ mm. in diameter), and a keel extending from the gland to the base of the sheath.	4. Whip leaves average 10 mm. long with a long narrow sunken gland most of its length, no keel.
5. Spur leaves 1½ to 2 mm. long with round gland or frequently eglandular.	5. Spur leaves slightly larger with long narrow gland, elongate-elliptic, rarely eglandular.
6. Fruit large (6–8 mm. in diameter), aromatic, azure-blue, slightly bloomy, with slightly resinous juicy pulp, which is black when fresh and rust-brown when dry, fruiting branchlets straight.	6. Fruit slightly larger (7–9 mm. in diameter), aromatic, azure-blue, slightly bloomy, with slightly resinous juicy pulp which is green when fresh or dry, fruiting branchlets usually crooked.
7. Seed chocolate-brown, 5 mm. in length, 1, rarely 2 per berry-cone, sharply pointed tip, no pits, occasionally a very narrow longitudinal groove, smooth white hilum covering at least one-fourth the length of the seed.	7. Seed tan to chestnut-colored, 3–4 mm. in length, 3 or 4, rarely 6 to 8 per berry-cone, extremely angular, numerous deep pits, irregular light tawny hilum covering one-half to three-fourths the length of the seed.

But is *J. tetragona* Schl. var. *oligosperma* Engelm. to be placed in synonomy with *J. monticola* Mart. and what is its relation to the Texas calciphile *J. Ashei*? The specimens[6] on which Engelmann based this variety, *Gregg 106* (June 2, 1848) and *398* (Aug. 31, 1848) collected near Saltillo, Mexico, have been

[6] ENGELMANN, G. Trans. Acad. Sci. St. Louis 3: 591.

Plate I. Comparative Gross Morphology of Juniperus monticola and Juniperus Ashei



studied and must be referred to *J. monosperma* (Engelm.) Sarg., placing the var. *oligosperma* in synonomy with Sargent's species. A slight complication exists because of Gregg's collecting methods. The duplicate of *Gregg* (*106*) in the Gray Herbarium is a hybrid of *J. Ashei* and *J. monosperma*, showing intermediate morphology. There are at least four and probably more species of *Juniperus* growing on the foothills in the vicinity of Saltillo. Hybridization is common where juniper species grow together. Gregg most likely collected from a mixed population and gave a hybrid and fairly typical specimen of *J. monosperma* the same number later when he prepared his labels. The typical specimen of *J. monosperma* went to Engelmann and the other (the hybrid) went to Gray.

This error on the part of American authors in referring to the Texas juniper by means of the various names for the very different Mexican species is the source of the confusion. The Texas juniper is a distinct species from the Mexican one; consequently, none of the above names apply. Other names, all synonyms of *J. monticola* forma *compacta*, which have been erroneously applied to the Texas species are *J. sabinoides* (HBK) Nees (1847), *Sabina sabinoides* (HBK) Small (1903), and *J. sabinoides* (HBK) Sargent (1897). The latter combination has no status since the same combination cannot be made twice.

Engelmann[7] described a juniper from "West Texas" as *J. occidentalis* Hook. var. *conjungens* Engelm. His description was rather sketchy but it fits *J. Ashei* better than any other southwestern species. His illustration of var. *conjungens*[8] precisely fits the collection by Berlandier (671 = 2081) which Engelmann cites. Other collections (numbers and dates are supplied by the present author) which Engelmann cites are those of Lindheimer from the base of the Balcones Escarpment, New Braunfels, Texas, 1848 (362 and 228) Feb. 1850, May 1875, and Lindheimer (1194, 1195, 1196, 1197, 1198) from Comanche Spring and New Braunfels, Feb. 1850; Wright, New Braunfels, Texas; Bigelow, the only specimen seen in the Engelmann Herbarium, was collected in 1853 in the Valley of the Pecos, Texas, labelled *J. occidentalis* Hook. (the specimen is actually *J. monosperma* Sarg.); Hall (615 = 7741) from Austin, Texas, May 15, 1872.

[7] Engelmann, G. loc. cit. p. 590.
[8] Engelmann, G. loc. cit. p. 585.

While Ferdinand Lindheimer and Elihu Hall collected in Texas in the vicinity of San Antonio, Austin, and New Braunfels, Charles Wright and John M. Bigelow collected mostly in west Texas during the Mexican boundary survey. Wright's specimen from New Braunfels (undated and without number) was probably collected May 29, 1849, according to the list of localities visited by him published by Wooton.[9] All of these specimens excluding Bigelow's are from the Balcones Escarpment in a region where hybrid swarms between *J. Ashei* and *J. virginiana* are legion. These specimens are not typical of *J. Ashei* but are probably backcrosses from hybrid material to *J. Ashei* and should be identified with the latter species. Berlandier's specimen particularly shows a few characters of *J. virginiana,* such as elongate glands on the long shoot leaves, foliage fine and dark green instead of thick and olive green, teeth on the leaf margins irregular in size and remotely spaced. Even though these specimens probably are of hybrid origin, they are so close to *J. Ashei* in morphology that I consider them to belong to that species.

Other specimens which Engelmann mentions in relation to *J. occidentalis* var. *conjungens* were a Sartorius collection from Mexico in the Torrey Herbarium and an Aschenborn (381) specimen from Zimapan, Mexico. Engelmann felt that these specimens were probably the same thing as his var. *conjungens.* I have examined these specimens, and the Sartorius collection is a specimen of *J. monticola* Mart.; the Aschenborn (381) is a specimen of *J. monosperma* (Engelm.) Sarg. He also cites a Charles Wright collection ". . . found in the damp rocky woods of the mountains of eastern Cuba a few individuals of a middle-sized tree, apparently very rare, of which only male specimens were obtained (Pl. Cub. 3187, *J. virginiana,* Griseb. Pl. Cub. 217), . . ." This specimen belongs to the species *J. lucayana* Britton.

Since the specimens on which the var. *conjungens* was based are not hybrids in the technical sense, the name *conjungens* (1877) is a valid varietal epithet for the calciphilous juniper of central Texas. However, if the view be adopted that this juniper deserves specific rank, the only available name is *J. Ashei* Buchholz (1930).

[9] Wooton, E. O. Bull. Torr. Bot. Club **33**: 563.

The following outline will serve to summarize the nomenclatural status of *J. Ashei*.

JUNIPERUS ASHEI Buchholz, Bot. Gaz. **90**: 326–334. 1930. *Cupressus sabinoides* of authors, not of Humboldt, Bonpland & Kunth. *Juniperus mexicana* of Standley, Contr. U. S. Nat. Herb. **23**: 62; of Palmer and Steyermark, Ann. Mo. Bot. Gard. **22**: 454, 1935, of authors but not Sprengel nor Schlechtendal. *Juniperus sabinoides* of authors not Grisebach or Nees. *Juniperus sabinoides* of Sargent, Silva N. Am., **X**: 91. 1897, not *Cupressus sabinoides* HBK. *Sabina sabinoides* of Small, Fl. Southeastern U. S., 33, 1903, not *Cupressus sabinoides* of Humboldt, Bonpland & Kunth. *Juniperus occidentalis* Hook. var. *conjungens* Engelm., Trans. Acad. Sci. St. Louis **III**: 590. 1877.

Buchholz[10] described *J. Ashei* from material collected on the bluffs of the White River near Sylamore, Arkansas, but he did not clearly designate a type in his published account of it. However, there are two herbarium sheets of this species in the Herbarium of the University of North Carolina labeled as types, one labeled ♀ type and the other ♂ type specimen.

There are no special considerations in relation to the type method given to dioecious plants in the International Rules of Botanical Nomenclature. In *Juniperus* the female specimen possesses the best characters for differentiating taxa, so that specimens bearing mature berry-cones are the better material for types.

Buchholz[11] wrote "Material examined.—Arkansas (J. Ashei): Sylamore, W. W. Ashe, Jan. 9, 1923, Apr. 25, 1924, and Apr. 28, 1925, Sept. 16, 1923, and Mar. 6, 1924, male- and female-type specimen, in herb. W. W. Ashe (cotype material on deposit at Herb. Mo. Bot. Gard. and elsewhere)." The ♀ type specimen bears three dates one of which, Sept. 16, 1923, he cites. The ♂ type specimen bears the date Mar. 16, 1924 which may have been cited as Mar. 6, 1924. The specimen marked ♀ type is accession number 22520 of University of North Carolina Herbarium. It consists of 3 twigs collected at different dates and 2 pieces of bark all from the same tree. The twig with smaller immature fruit was collected March 28, 1924, just after fertilization had occurred; the twig with intermediate sized fruit was collected May 6, 1924; the twig with mature fruit was collected September 16, 1923; and this latter twig bearing

[10] BUCHHOLZ, J. T. Bot. Gaz. **90**: 326–334. 1930.
[11] BUCHHOLZ, J. T. loc. cit.

the September date is hereby designated the *Lectotype*. The other two specimens on this sheet and the specimens on the sheet marked male-type are *Paratypes*. These specimens were in the W. W. Ashe Herbarium now on deposit at the Herbarium of the University of North Carolina.

Type locality is the limestone soil in the basin of the White River near Sylamore, Arkansas. This material which constitutes the nomenclatural type is not biologically typical of the species *J. Ashei* since it was derived in the vicinity of hybrid swarms between *J. Ashei* and *J. virginiana* and shows introgression from *J. virginiana*.

In his study of Mexican Junipers Martínez[12] stated that there is no juniper known to him in Mexico which could be referred to the Texas calciphile, *J. Ashei* or *J. mexicana* Spreng. sensu American authors. He referred all those specimens from Mexico so named to either *J. erythrocarpa* Cory or *J. monosperma* (Engelm.) Sarg. However, there are three collections from Mexico known to me which I refer to the Texas species, *J. Ashei: I. M. Johnston, 9195*, from Protrero de La Mula, northwest of Ocampo, Coahuila; *F. Lyle Wynd and C. H. Mueller, 284*, Hacienda Mariposa near Puerto Santa Ana, Coahuila, determined as *J. pachyphloea; F. Lyle Wynd and C. H. Mueller, 360*, near Puerto Santa Ana, Coahuila. None of these three specimens is typical of Ashe juniper; nevertheless, each resembles *J. Ashei* more than any other species and deserves to be considered a variant of that species. In several characters they vary toward *J. monosperma*, and I believe that they represent introgressants of *J. Ashei* by *J. monosperma*. Since taxonomists do not propose to name every hybrid variant and particularly every introgressant, these specimens should be referred to *J. Ashei* Buchholz.

Martínez annotated I. M. Johnston's specimen 9195 as *J. monosperma* (Engelm.) Sarg. and cited it as such in his revision. He had sent the specimen to John Buchholz who told Martínez that it was not *J. Ashei*, the species which Buchholz himself had named. This situation does not seem so strange when one considers the facts. Buchholz named material from the Ozarks where specimens of *J. Ashei* are really introgressants with genes

[12] Martínez, M. loc. cit. p. 101.

of *J. virginiana* and have fine foliage, smaller fruit, more often with two seeds, and Johnston's specimen is from Coahuila where *J. Ashei* has received genes from *J. monosperma.*

The distribution of *J. Ashei* may be considered a narrow ellipse about 1,000 miles long roughly running from southwestern Missouri to central Coahuila with a northeast, southwest axis. In the northeast the species is disjunct and shows strong introgression from *J. virginiana;* in the southwest the species again occurs in isolated colonies and shows introgression from *J. monosperma* from Coahuila up the western border of the range of *J. Ashei* to the Valley of the Pecos in Texas.

The nomenclature of the Mexican species involved in this problem may also be outlined following Martínez, 1946.

JUNIPERUS MONTICOLA Martínez, Anales Del Instituto de Biologia **17**: 79, 1946, based on *Juniperus tetragona* Schl. not Moench, 1794.

J. MONTICOLA Mart. forma COMPACTA Mart. loc. cit. p. 85.

Cupressus sabinoides HBK., Nova Gen. et Sp. Plant. **II**: 3, 1817. *Juniperus mexicana* Spreng., Syst. Veg. Ed. 3: 909, 1826, based on *Cupressus sabinoides* HBK. *Juniperus sabinoides* (HBK) Nees, Linnaea **XIX**: 706, 1847, not A. H. R. Grisebach. Spicil. Fl. Rumel. 1844. *Sabina sabinoides* (HBK) Small, Fl. Southeastern U. S. 33, 1903, as to basinym only.—

CRANBROOK INSTITUTE OF SCIENCE BLOOMFIELD HILLS, MICHIGAN.

NEW OR ADDITIONAL RECORDS OF GRASSES IN MARYLAND AND DELAWARE

Clyde F. Reed[1]

For many years chrome ore has been imported into the Port of Baltimore, and Canton has been one of several places where the ore has been piled until needed by the various industries in and about Baltimore. Some of the piles have existed in place for several years permitting seeds to germinate and grow, and thus allowing the plants to spread to nearby fields. Well over 200 species of plants have been found by the author and others on these chrome piles, a great many of which have never been recorded in the floras of eastern North America. Some of these species have been collected in Canton as far back as 1890 by Charles C. Plitt, and his collections are in the Reed Herbarium. Therefore, some of these plants have been around Canton for over fifty years.

In this paper only the grasses from the chrome piles will be presented along with some species of grasses from other areas of Maryland and Delaware, the records of which extend the known ranges for these species and are in the main new to Maryland and Delaware.

I wish to thank Agnes Chase and Jason Swallen of the United States National Herbarium for aiding in the identification and verification of these specimens cited below. Specimens of most of the species have been deposited in the U. S. National Herbarium.

There were 31 species of grasses found on the chrome ore piles at Canton this year by the author, 16 of which are new to Maryland and the eastern United States in general. Many of the genera are new to eastern North America. Canton is an industrial area in the southeast corner of the city of Baltimore near the Baltimore County border, and in the past has been considered as being in that county. The ranges of the species as they affect our region only are given, unless the extension is unusual for the known range of a given species. Species marked with an asterisk are new to Maryland.

[1] Reed Herbarium, Baltimore 34, Maryland.

*Eragrostis diffusa Buckl. This species being found in Maryland extends the range east from Indiana and north from North Carolina. It is a western species which has been introduced occasionally in the Eastern States. (Hitchcock, p. 153, fig. 204.) Maryland specimens: Canton, *Reed 32750*, *Reed 32740*, *Reed 32785* collected Sept. 27, 1953; *Reed 32908*, Oct. 12, 1953, panicle is fewer-flowered than typical plants.

Other species of *Eragrostis* which were found on the chrome ore piles which have been reported previously from Maryland are: *E. cilianensis* (All.) Lutati, *Reed 32711*, Sept. 27, 1953 and *Reed 32893*, Oct. 12, 1953; *E. pectinacea* (Michx.) Nees, *Reed* 32905, Oct. 12, 1953 and *Reed 33029*, Nov. 10, 1953; *E. poaeoides* Beauv., *Reed 32713* and *32792*, Sept. 27, 1953.

*Tridens pulchellus (H.B.K.) Hitchc. This western species is native from California and Nevada to Texas. (Hitchcock, p. 208, fig. 275.) Maryland specimen: Canton, *Reed 32827*, Sept. 27, 1953.

Tridens flavus (L.) Hitchc. (*Triodia cuprea* Jacq.) This species was collected in Canton, Aug. 25, 1893 by C. C. Plitt. It has been found many times by the author in other regions of Maryland. Specimen in Reed Herbarium cited above.

*Enneapogon desvauxii Beauv. This western species is native from Utah and Texas to Arizona and south to Argentina. (Hitchcock, p. 227, fig. 304.) Maryland specimens: Canton, *Reed 32907*, Oct. 12, 1953; *Reed 33002*, Nov. 2, 1953.

*Sporobolus pyramidatus (Lam.) Hitchc. This species is native from Colorado and Kansas southeastward to southern Florida, Louisiana and Texas, and thence to tropical America. (Hitchcock, p. 424, fig. 608.) Maryland specimens: Canton, *Reed 32766*, Sept. 27, 1953.

*Aristida adscensionis L. This species is native from California to Texas and Missouri. (Hitchcock, p. 468, fig. 685.) Maryland specimens: Canton, *Reed 32752*, and *Reed 32826*, Sept. 27, 1953.

*Tragus racemosus (L.) All. Although this is an Old World species, it has spread from Arizona to Texas in western United States and from Maine to North Carolina in eastern United States. (Hitchcock, 484, fig. 713.) New to Maryland: Canton, *Reed 32800*, Sept. 27, 1953.

*Leptochloa dubia (H.B.K.) Nees. This is another western species, being native from Arizona to Oklahoma and Texas. (Hitcock, p. 491, fig. 721.) Maryland specimens: Canton, *Reed 32751*, Sept. 27, 1953.

*Chloris virgata Swartz. This species is native in central and southwestern United States and has been introduced in several states in eastern areas as far as Florida, North Carolina and Ohio. It has been found on wool waste in Massachusetts and Maine. Now from chrome ore piles it can be recorded from Maryland: Canton, *Reed 32714*, Sept. 27, 1953. (Hitchcock, p. 527, fig. 764.)

*Bouteloua barbata Lag. This is another western species, native from California and Utah to Texas. (Hitchcock, p. 538, fig. 781.) Maryland specimens: Canton, *Reed 32824*, Sept. 27, 1953.

*Bouteloua aristidoides (H.B.K.) Griseb. This species is native from California and Nevada to western Texas. (Hitchcock, p. 533, fig. 772.) Maryland specimens: Canton, *Reed 32727*, Sept. 27, 1953.

*Eriochloa gracilis (Fourn.) Hitchc. This western species is native from southern California along the Rio Grande to western Texas and Oklahoma. (Hitchcock, p. 590, fig. 850.) Maryland specimens: Canton, *Reed 32728*, Sept. 27, 1953.

*Brachiaria erucaeformis (J. E. Smith) Griseb. This Old World species has been cultivated in grass gardens and is occasionally escaped. (Hitchcock, p. 593, fig. 857.) However, from the chrome ore piles are the following Maryland specimens: Canton, *Reed 32763*, Sept. 27, 1953.

*Paspalum distichum L. In eastern United States this species is known from Pennsylvania and New Jersey south to Florida. However, it is found through the South and thence to western United States. New to Maryland is the following record: Canton, *Reed 32749*, Sept. 27, 1953. (Hitchcock, p. 603, fig. 866.) *Paspalum circulare* Nash is also found on the chrome ore piles at Canton, *Reed 32810*, Sept. 27, 1953.

*Setaria grisebachii Fourn. This is a weed, native from Texas to Arizona and Mexico. (Hitchcock, p. 724, fig. 1103.) Maryland specimens: Canton, *Reed 32731*, Sept. 27, 1953; *Reed 32909*, Oct. 12, 1953.

Setaria lutescens (Weigel) Hubb. (*Reed, 32799*, Sept. 27, 1953) and *S. verticillata* (L.) Beauv. (*Reed 32674*, Sept. 27, 1953) have also been found on the chrome ore piles at Canton.

Sorghum vulgare Pers. and **S. vulgare* var *technicum* (Koern.) Jav. were both found on the chrome ore piles at Canton, Maryland. Sorghum is usually cultivated in the South and has escaped in waste places there. The variety *technicum* is the one used in the making of brooms. Maryland specimens: Canton, *Reed 32761*, Sept. 27, 1953 and *Reed 32753* (var. *technicum*), Sept. 27, 1953.

Sorghum halepense (L.) Pers. also grows on the chrome ore piles, being found elsewhere in Maryland as well. Canton, *Reed 32741*, Sept. 27, 1953 and *Reed 32683*, Oct. 2, 1953.

There are several other species of grasses on the chrome ore piles which have been reported previously from other places in Maryland. These are: *Phragmitis communis* Trin. (*Reed 33034*, Nov. 10, 1953); *Triticum aestivum* L. (*Reed 32672*, Sept. 27, 1953); *Hordeum vulgare* L. (*Reed 32825*, Sept. 27, 1953); *Eleusine indica* (L.) Gaertn. (*Reed 32717*, Sept. 27, 1953); *Dactyloctenium aegyptium* (L.) Beauv. (*Reed 32718* and *32720*, Sept. 27, 1953); *Cynodon dactylon* (L.) Pers. (*Reed 32784*, Sept. 27, 1953; *Reed 32914*, Oct. 12, 1953; *Reed 32696*, Sept. 27, 1953 (along shores near chrome piles)); *Phalaris canariensis* L. (*Reed 32887*, Oct. 12, 1953); *Panicum dichotomiflorum* Michx. (*Reed 32748*, Sept. 27, 1953).

Several other grasses worthy of mention as being new or as extensions of ranges are the following from various regions of Maryland or Delaware.

*Bromus rigidus Roth. Fernald gives "Maryland and D. C."; Hitchcock gives "Maryland and Virginia"; the other publications mention Maryland; Tatnall does not list it from Delaware. Therefore, new to Delaware—Edge of Indian River, west of Millville, Sussex County. June 28, 1953. *Reed 31529*.

*Bromus japonicus Thunb. var. porrectus Hack. Although this species is stated by all references as being found in Maryland, references to Delaware are absent. Hitchcock mentions that this variety is more common from Maryland and southward. New to Delaware—Edge of Indian River, west of Millville, Sussex County. June 28, 1953. *Reed 31528*.

Arrhenatherum elatius var. bulbosum (Willd.) Spenner. Although Hitchcock does not include either Maryland or Delaware in the distribution of this species or variety, it has been listed from Maryland by Chase in Hermann, by Norton and Brown and by Fernald and from Delaware (Sussex Co.) by Tatnall. An additional record from Delaware: roadside, off route no. 26, between Dagsboro and Millville, Sussex Co., June 28, 1953. *Reed 31515*.

ARTHRAXON HISPIDUS (Thunb.) Makino. This species is reported as rare in Maryland, being listed in Hitchcock from near Washington, D. C. To this record may be added the following. Fields, Cub Hill, Baltimore County. Oct. 15, 1953. *Reed 33143. A. hispidus* var. *cryptatherus* (Hack.) Honda is stated to be the more widely distributed form in eastern United States, from Pennsylvania to Florida and westward to Missouri and Louisiana.

FESTUCA ARUNDINACEA Schreb. Hitchcock is the only reference cited that mentions this species as being found in eastern United States (Maine, Massachusetts, New York, Ohio, Kentucky and westward). Fernald does not even mention it from that region. New to Delaware: roadside, off route no. 26, between Dagsboro and Millville, Sussex Co., June 28, 1953. *Reed 31510.*

TRIPLASIS PURPUREA (Walt.) Chapm. This species has been listed by Chase in Hermann from Maryland and by Tatnall from Delaware. An additional record from Delaware is—sandy beach, Broadkill Beach, Sussex Co. Aug. 31, 1952. *Reed 30449.*

DANTHONIA SERICEA Nutt. This species is listed by Tatnall from Sussex County, Delaware and southward. Hitchcock (p. 310) listed it from both Maryland and Delaware. Additional material may be cited: open wet fields, Gray's Creek, just north of Gibson Island, Anne Arundel County, Maryland. July 7, 1951. *Reed 25958.* Fernald (p. 150) gives the range of this species as "Florida and Louisiana to New Jersey and southern Kentucky." Hitchcock extends its range to Massachusetts (Sherborn) along the Coastal Plain.

ARUNDINARIA TECTA (Walt.) Muhl. The range for this species is given by Hitchcock from southern Maryland to Alabama and Mississippi on the Coastal Plain. In northcentral Maryland in the Piedmont Region but on a Coastal recess at about 400 feet altitude there are several coastal plants, among them being this bamboo. This record extends the range northward in Maryland as well as up upon the Piedmont Plateau. Patch about four acres, swampy place along Harford Road, one-half mile north of Carney, Baltimore County. Aug. 19, 1951. *Reed 26865.*

POLYPOGON MONSPELIENSIS (L) Desv. The range for the Rabbit's-foot Grass on the Delmarva Peninsula is given by Tatnall (p. 31) as "from Cape Charles northward to Worcester and Wicomico Counties." Within this range I wish to report the following collections: marshy land, Chincoteague Island, Accomac County., Virginia. Aug. 16, 1947. *Reed 9150* and July 12, 1953. *Reed 31752* and *31753.* Then, I wish to extend the range northward and westward on the Delmarva Peninsula to Dorchester County: edge of woods, between Drawbridge and Bucktown, Maryland. June 28, 1953. *Reed 31600.*

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Heterotheca subaxillaris on Long Island, New York.—The New York International Airport in Queens County, Long Island, New York is apparently the northernmost station for *Heterotheca subaxillaris* (Lam.) Britt. & Rusby.

The writer first observed the species at this locality in the late summer of 1950, its weedy annual or biennial yellow ray-flowered plants amassed in large ribbon-like colonies along the access and service roads and the airstrips of the nearly five thousand acres of dry sandy reclaimed salt marsh which constitute the terrain of this vast air terminus. Observations over three subsequent growing seasons indicate these colonies are well-established and increasing.

Fernald[1] indicates that the original range of *H. subaxillaris* would seem to have been Florida to Arizona and Mexico, having spread northeastwardly to Delaware long ago (and northwardly to Kansas). Yet it was only in 1939 that the same author[2] collected in Isle of Wight County, Virginia the first specimen of *H. subaxillaris* to be recorded from between North Carolina and Maryland. Perhaps this is more a picture of incomplete reporting than of actual distribution. Gleason[3] cites a specimen taken from ballast in Philadelphia in 1864. Tatnall[4] observed that the species was well established in southern New Jersey (near Philadelphia) in 1946, and ventured the opinion that the species was apparently spreading rapidly northward. The present writer's collection ninety miles to the northeast may bear out this suggestion. In 1953, several plants were seen just outside the perimeter of the airport. In view of the abundant local ecological conditions favorable to this xerophyte, and taking into account its windborn achenes, the spread of *H. subaxillaris* eastward on Long Island, and perhaps even farther north on the Coastal Plain should be watched for.

The possible source of *H. subaxillaris* on Long Island is a matter of some interest. In attempting to hold the shifting sands of the New York International Airport, the Port Authority engineers planted thousands of tufts of beach grass obtained from various sources, only one of which, in Delaware,

[1] Fernald, M. L. 1950. Gray's Manual of Botany, 8th edition. p. 1378.
[2] Fernald, M. L. 1939. Rhodora 41: 469, 571.
[3] Gleason, H. A. 1952. The New Britton & Brown Illustrated Flora. vol. 3, p. 412.
[4] Tatnall, R. R. 1946. Flora of Delaware and the Eastern Shore, p. 256.

lies within the usual range for this species. Years ago, before the area was altered for its present purpose, it bore the name of "Idlewild", and it was a popular botanizing station with local enthusiasts, who visited it to see many fine specimens of the beautiful Yellow-fringed Orchid, *Habenaria ciliaris* (L.) R. Br., a species even then doomed in the metropolitan area. Idlewild Point was noteworthy as the only American station for the typical *Elymus arenarius* L.[5] and it would be interesting to revisit the spot to check for this species. Adventitious plants other than *H. subaxillaris* may be expected to appear on the altered Idlewild site, which may serve to respark the area as an interesting botanical workground.

The most diagnostic characteristic of *H. subaxillaris* in the field is the strong camphorous odor emitted by bruised tissue. This is a fact which generally seems to be passed over in the literature, but it is singular enough to immediately separate it in the field from any other plant it might superficially resemble, such as species of *Chrysopsis*. It is this attribute which gives the common name of "Camphorweed" to the plant, surely a far more apt designation than "Golden Aster," which should be strictly limited to species of *Chrysopsis*.

The writer wishes to express his appreciation to Mr. Joseph Monachino of the New York Botanical Garden Herbarium for verifying his identifications and for other very helpful services. A sheet verifying this record has been deposited in the herbarium there and a duplicate is deposited in the herbarium of Tackapausha Preserve of Nassau County, Seaford, New York.
—Leonard J. Uttal, uniondale, new york.

[5] Monachino, J. 1941. Torreya 3: 97–99.

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